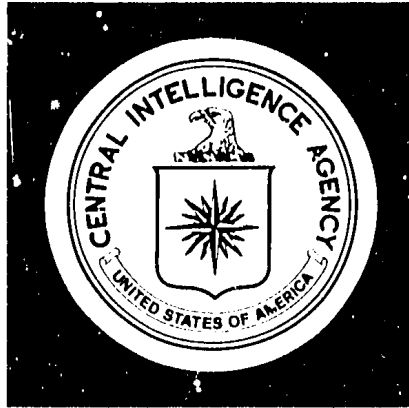


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# Intelligence Report

## *The Economic Impact of Soviet Military Spending*

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ER IR 75-3  
April 1975

Copy No. 123



## The Economic Impact of Soviet Military Spending

### KEY JUDGMENTS

The most important conclusions concerning the influence of economic considerations on Soviet military spending are:

- The Soviet leaders have not acted as though costs have been a major factor in their military decisions. Defense programs have been well funded, even during periods of lagging economic growth, and the followthrough on new programs has been strong.
- Defense costs are unlikely to constrain the Soviets unduly in the future. Political priorities favor continued emphasis on defense, and expected economic growth should permit continued increases in defense spending.

Defense spending as a share of gross national product is often used as a measure of the burden of a nation's defense effort. In fact, however, no single measure adequately describes the economic impact of the Soviet defense effort. Furthermore, the notion of burden implies a perception of the political-economic benefits to be derived from the use of economic resources for defense, compared with those to be derived from other uses. The weight of the burden therefore varies according to the outlook of the observer.

- In terms of shares of national economic aggregates, the Soviet defense effort currently takes less than 8% of GNP, less than 10% of the labor force, 10%-15% of industrial production, and about 20%-30% of machinery output. All of these proportions have declined over the past decade even though defense expenditures have grown by about 3% per year.
- Looked at from a different perspective, defense impacts heavily in the high technology areas where it exerts a priority claim on manpower and output. For example, defense still takes the lion's share of high-grade scientific and technical talent, and in electronics, defense requirements account for almost the total output of integrated circuits.

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- Finally, the peculiarities of the Soviet economic system introduce additional uncertainty to the evaluation of the economic impact of defense programs. In the USSR the character of planning, management, and incentives poses substantial and persistent obstacles to the efficient use of resources released from the military sector.

Soviet perceptions of the burden of defense spending could be shaped by considerations quite different from those that influence Western perceptions.

- Unfortunately, we have little direct evidence on how Soviet leaders view the burden of defense.
- On the rare occasions that Politburo members have addressed this question, they have simply noted that, although defense spending is a burden and the resources could be better used elsewhere, defense requirements will be met as long as necessary.

Although the Soviet perceptions of their defense burden are elusive, the magnitude of Soviet military programs can be assessed against the yardstick of US programs and US costs:

- The dollar costs of Soviet defense programs measured in 1973 prices have grown steadily since the mid-1960s.
- They have exceeded US expenditures each year since 1971 and amounted to about \$93 billion in 1974 – 20% higher than US outlays.

## DISCUSSION

### Introduction

1. The nature and dimensions of the burden of Soviet defense programs on the USSR have been the focus of intense interest in the intelligence community for almost 30 years. Conceptually, there are two kinds of factors that bear on the assessment of the Soviet defense burden. The first are "objective" measures of the economic impact of defense programs. The second are the "subjective" valuations that Soviet leaders attach to defense programs of various sizes, compared with their valuations of benefits to be derived from the application of economic resources to nonmilitary programs. Although this political-economic calculus probably is not performed explicitly by Soviet decisionmakers, these factors must play some part in the Soviet decisionmaking process, however imperfectly and implicitly.

2. This report begins by setting out a number of "objective" measures of the economic impact of Soviet defense programs. Even these measures are not easily understood. (There are, for example, frequent allusions to the so-called gross national product (GNP) paradox: with Soviet GNP about one-half that of the United States and with the scale of Soviet military programs equal to or greater than those of the United States, how can the share of GNP devoted to defense be roughly the same in the two countries?) Then, the report considers the quite separate question of how Soviet leaders perceive the cost of defense expenditures in terms of lost alternatives. In part, this is an exercise in politics rather than economics, with the aim of discovering whether the political impact of defense spending on Soviet policymaking might be of different weight and direction than the economic effects.

### The Nature of the Burden

3. The commonsense notion of burden is an obligation or expense that constrains freedom of action. The burden of defense programs on a country has been looked at in the same way. Military programs use manpower, raw materials, and production capacity that could otherwise be employed to increase economic growth and improve living conditions.

4. Typically, the cost of military programs is accepted as the measure of the value of nonmilitary goods and services that a country forgoes because of these programs. The resources needed to produce, say, one billion rubles of military goods and services are assumed to provide one billion rubles of consumer goods or new investment if transferred to civilian uses.

5. This assumption will not hold unless

- prices of goods and services in all sectors of the economy are proportional to the costs of the resources (labor, materials, etc.) used in producing them,
- the amount of resources transferred to a given sector is not so large as to reduce sharply the marginal productivity of additional labor and capital, and
- political or institutional factors do not foster systematic differences in the productivity of resources in different economic sectors.<sup>1</sup>

6. As we argue in a following section, the Soviet pricing system blurs the accounting of gains and losses, while sharp differences in the management of military and civilian production in the USSR tend to make the transfer relatively less effective than in Western economies. Even in the United States, the transfer would cause dislocations and take time, although the economy is far more flexible than the Soviet economy and US prices are a better approximation of resource cost than Soviet prices.

7. In considering the economic impact of military programs, some important spillover effects must also be kept in mind. In both the United States and the USSR, military outlays have resulted in substantial gains in civilian technology. The development of computers, microelectronics, and successive models of jet passenger aircraft has depended heavily on military R&D and production experience. In addition, the Soviet and US armed forces have trained successive generations of servicemen in a wide range of occupational skills. This training has been particularly useful in the USSR, where a large share of the draftees possess only the most elementary technical skills before callup. The benefits to the civilian economy of these kinds of technology transfer and manpower training are important and must be taken into account in assessing the net cost of military programs.

8. Perhaps the most serious obstacle to arriving at an agreed-upon burden measure is that assessments differ because perceptions vary. The point of view of the economist is not that of the political leader. More important, perceptions of burden inevitably depend on national institutions. Certainly the US leaders responsible for shaping policies must deal with a wider range of political constraints than Soviet leaders. Even so, Soviet leaders too must weigh many conflicting interests in assessing the burden imposed by their military programs.

1. For a description of the institutional setting, see Appendix A.

### "Objective" Measures of the Burden

9. Despite the qualifications noted above, there is little choice but to use military program costs as a measure of the civilian goods and services forgone. To place these costs in perspective, they are almost always presented in relative terms -- the share of defense expenditures in GNP, the share of defense procurement in total industrial production, and the like.

10. The indicators of defense burden in the United States and the USSR may be compared in this manner. Table 1 shows the shares of GNP, industrial production, machinery output, the working-age population, and employment that were required to support the military establishments of the USSR and the United States in 1973.<sup>2</sup> The defense share of Soviet GNP is stated at factor cost because of problems in pricing that are discussed below. Moreover, the shares are presented as a range because of the possible downward bias in our estimates due to problems of coverage and pricing (see paragraphs 22-33).

Table 1  
USSR and the United States:  
The Defense Share of Selected National Aggregates  
1973

		Percent
	USSR <sup>1</sup>	United States
Gross national product	6-8 <sup>2</sup>	6
Industrial production	10	6
Production of machinery	22	10
Population of working age	6	3
Employment in:		
Industry	11	6
Machinery industries	20	13

1. CIA estimates. The GNP share is at factor cost; the other shares are based on I-O calculations and therefore must use established prices.

2. The lower end of the range represents current estimates of Soviet defense spending as a share of GNP; the higher end takes into account a possible 20% underestimate of defense outlays due to the factors discussed in paragraph 32.

2. For a description of some of the alternative measures of burden, see Appendix B. The year 1973 is chosen for comparison because it is the most recent year for which reasonably firm data are available. Even in 1973, however, the US figure includes \$6 billion of Vietnam-related expenditures, which have no counterpart in the Soviet figure. Defense expenditures include the pay and allowances of uniformed and civilian personnel, the operation and maintenance of forces, the procurement of weapons systems, and military research and development. The spending definition is that of the Department of Commerce, which excludes, for example, transfer payments such as pensions.

11. Excluding manpower costs, the defense shares of GNP would be 4% in the USSR and 3% in the United States, reflecting the fact that Soviet military pay is low relative to US military pay. The share of GNP devoted to defense in both countries has declined since the mid-1950s, when it was more than 12% in the USSR and 9% in the United States.

12. The defense share of industrial output and particularly the output of the machinery or engineering industries is a key aspect of the economic impact of military programs because it highlights the potential tradeoff between military goods and investment goods. Soviet industry in 1973 supplied a larger percentage of output to defense than did US industry. In the middle and late 1960s, however, the US share was closer to the Soviet share of 10%-12% because of the large Vietnam-related US purchases of military hardware.

13. A comparison of Soviet and US uses of machinery output for defense purposes provides a sharper contrast. In the USSR, the defense share of machine building and metalworking output has declined from about 30% in 1960 to 20% today, whereas the US defense establishment normally takes only 10%-12% of the output of the comparable US engineering industries. The much higher Soviet share results from the fact that consumer durables are relatively much less important in Soviet machinery output than in US machinery output. During the Vietnam involvement, US purchases peaked at around 15% of machinery production. Although reliable data are hard to come by, we have estimated that in the USSR about 90% of the output of integrated circuits went to defense in 1970, 75% of the production of the aircraft and shipbuilding industries, 60% of electronics, 50% of communications equipment, and 35% of numerically controlled machine tools.

14. Because of the well-founded suspicion of Soviet prices, comparisons of the manpower preempted by military programs have been frequently used in comparisons of the burden of military programs in the United States and the USSR. Uniformed and civilian employees of the Ministry of Defense in the USSR and the Department of Defense in the United States, employees in the defense industries of the two nations, and employees in nondefense industries that support defense production accounted for more than 8% of all employment in the USSR in 1973 and 6% of all US employment. All defense needs preempted 6% of the population of working age (more than 14 years) in the USSR and 3% in the United States.

15. But manpower comparisons have their own defects. The shares of defense-related manpower in total manpower will be a measure of relative burden only if labor productivity is the same in military and civilian production in both



the USSR and the United States. Indeed, the estimates of manpower engaged in military-related production in the USSR depend on the assumption that labor productivity in military production equals that in civilian production.

### The GNP "Paradox"

16. Before considering the reliability and meaning of the measures of burden presented in Table 1, an alternative measure must be considered – and rejected. Over the years, it has been estimated that

- the dollar value of Soviet GNP has increased from slightly less than one-half to slightly more than one-half of US GNP, and
- Soviet military expenditures valued in US prices have climbed from somewhat less than US defense outlays to somewhat more than US outlays.

Some observers concluded from these estimates that the economic impact of defense programs must be roughly twice as large in the USSR as in the United States.

17. The fact is, however, that the Politburo spends rubles, not dollars, on defense. Defense goods and services are relatively cheap in the USSR, compared with the United States. As a result, the share of defense in GNP in dollar prices is much higher than in ruble prices<sup>3</sup> (see Table 2).

18. The outcome is not surprising. First, defense manpower is paid at a low rate in the USSR compared with average military manpower costs in the United States. Outlays for military manpower are 25% of total military expenditures in rubles; the dollar share would be 45%.

19. Military production is also relatively less expensive than much of civilian production in the USSR. Throughout its history the USSR has concentrated on the development of war-supporting industries to the neglect of consumer-related

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3. Most of the dollar comparisons of the Soviet defense burden have been wrong on two counts. They have used dollar prices instead of ruble prices, and they have compared a dollar value of defense with a different kind of dollar GNP. Most often, defense is valued in dollar prices. The dollar GNP usually employed is the result of multiplying US GNP in dollars by the geometric average of comparisons of US and Soviet GNP calculated alternatively in dollar and ruble prices. In 1973, for example, the dollar value of defense spending (\$90 billion) would be compared not with the dollar value of GNP (\$914 billion) but with a lower value (\$697 billion) that uses the geometric mean of size comparisons estimated first in ruble prices (USSR/US = 0.40) and, second, in dollar prices (USSR/US = 0.70)

Table 2  
USSR: Gross National Product  
1973

	Billion 1955 Rubles		Billion 1973 Dollars	
	Value	Percent	Value	Percent
<b>Total</b>	<b>353</b>	<b>100</b>	<b>914</b>	<b>100</b>
Consumption	212	60	475	52
Investment	96	27	269	29
Defense	23	7	90	10
Other	22	6	80	9

production. This has resulted in what has often been called a dual economy – that is, a relatively efficient heavy industrial sector standing alongside a relatively inefficient consumer sector. In addition, the most important element of consumption in the Soviet Union – food and other farm products – has been dogged by the inefficiencies of collectivization, the draining away of the most productive manpower, and the high costs associated with a poor natural resource endowment. These factors all lead to differences in relative prices that make Soviet defense a larger proportion of GNP in dollar prices than in ruble prices.

20. Although ruble costs should be used in dealing with *burden*, dollar costs of defense spending are extremely useful in their own right. To compare the *scale of effort* represented by military programs of different countries, the programs must be priced alike. A comparison of the dollar cost of US and Soviet defense spending in a given year conveys a sense of the size of defense programs in the two countries in terms of the relative prices prevailing in the United States.<sup>4</sup> In 1973 dollar prices, Soviet defense programs have grown steadily since the mid-1960s, from an estimated \$72 billion in 1964 to about \$93 billion in 1974.<sup>5</sup> Cumulatively, Soviet defense programs measured in dollar cost terms amounted

4. Scale of effort, however, is several steps away from military capability. For example, the number of weapons available at a given point in time is the result of procurement programs carried out over a period of years as well as related hardware retirement policies. Capability also depends on the training and morale of the forces, geography, and a great many other factors.

5. In contrast, the trend in US defense outlays reflects involvement in Southeast Asia. From a level of about \$87 billion in 1964 (1973 dollars), US defense spending dropped in 1965, rose to a high of almost \$109 billion in 1968, and then declined, first gradually and then sharply, to about \$84 billion in 1971. Expenditures continued to decline, although more gradually, to about \$79 billion in 1973 and 1974.

to about \$900 billion in 1964-74 – about 90% of the US total. Since 1971 the dollar costs of Soviet defense programs have exceeded US defense spending – by about 20% in 1974. Logically, the comparison of scale of effort should be carried out in ruble prices as well. To construct a ruble comparison, US defense expenditures must be converted to rubles by appropriate average ratios of US and Soviet prices for the various categories of US defense spending. According to a very rough calculation, the ruble cost of US defense programs in 1974 was about 23.4 billion rubles.<sup>6</sup> Soviet outlays in 1974 are estimated at about 25.5 billion rubles – about 10% higher than the level estimated for the United States.

21. The quantitative results – that the comparison in dollars is more favorable to the USSR and the comparison in rubles is more favorable to the United States – reflect the fact that each country is better equipped to produce its own pattern of output than that of the other country. Practically all international GNP comparisons have found that the ratio of prices of goods between two countries is inversely related to the ratio of quantities produced. In other words, goods that are produced in large quantities in either country tend to sell at low prices in that country, and vice versa. Compared with Soviet prices, for example, consumption goods in the United States are relatively cheap in comparison with goods produced for investment and defense. Within the defense accounts, manpower is relatively cheap in the USSR compared with its cost in the United States; sophisticated equipment tends to be relatively more expensive for the Soviet military establishment. Thus dollar prices place a greater weight on those items in which the USSR has an advantage while ruble prices give greater weight to activities in which the United States has an advantage. Since the relative prices for military goods and services differ in the two countries, no unambiguous comparison of their defense efforts is possible, except in the unlikely case that both are buying an exactly proportional mix of goods and services.

#### Reliability of the "Objective" Measures of Burden

22. The measures of total GNP, civilian industrial production, civilian employment, and manpower used in the estimates of defense impact in Table 1

6. The ruble comparison has to be rough and dirty mainly because (1) the structure of the US defense spending accounts does not lend itself to this kind of calculation (it is almost impossible to isolate individual hardware items, for example) and (2) the available ruble-dollar conversion ratios have been developed to fit the Soviet procurement mix (we do not have ratios for categories of equipment that are bought by the US Department of Defense but not by the USSR Ministry of Defense).

are reasonably firm, probably subject to errors of no more than plus or minus 5%-10%, and such errors would not change the indicators much. But the accuracy of the measures does depend on whether all of the rubles spent on defense in the USSR have been counted and whether the ruble prices reflect the full cost of the resources employed in defense programs.

### *Coverage Problem*

23. Since the USSR reveals nothing about its defense spending aside from a single "defense budget" total of uncertain coverage and doubtful reliability, CIA uses a direct costing approach to estimate Soviet military expenditures. Judgments with respect to the number of weapons and forces are based chiefly on what is counted or estimated from observations of Soviet military activities. These numbers are then multiplied by estimates of their unit cost in rubles.

24. The estimates of Soviet defense spending are generally good on the large visible items such as missiles, aircraft, and ships and on the pay-and-allowance bill for uniformed personnel. These items account for about 50% of total spending, excluding R&D. The estimates are weaker for activities that are not readily observable -- such as R&D, operating, and general support costs.

### *Pricing of Military Products*

25. The evidence on Soviet pricing practices in military production is scarce and often contradictory. The goal of the 1967 price reform was to set prices so that they would cover direct costs and a reasonable profit based on the value of fixed and working capital used in the manufacture of a given item. In the past, military production -- like many sectors of civilian production -- probably has been subsidized. There is no evidence that this is the case today. The armed forces seem to pay the same price that industry does for common-use products such as electric power, coal, and petroleum products. Sometimes the military reportedly pays a higher price for a product than a buyer in the civilian sector. Upon further examination, the higher price usually turns out to be justified by the higher quality of the goods sent to the military. Military representatives at a defense plant closely inspect finished products to ensure their quality before accepting delivery, a practice without parallel in civilian industry.

26. While defense production is not subsidized, profit margins in defense production may be lower than in civilian production. Several apparently knowledgeable sources assert that the strong hand of the military consumer forces

a periodic repricing of newly introduced military hardware. As costs fall, prices are renegotiated. Prices for civilian machinery, on the other hand, frequently are kept at the levels established when production first starts – despite regulations calling for the setting of permanent prices after an initial break-in period. To the extent that tighter military control squeezes the profit margins of military industry to a degree not typical of civilian industry, the comparison of military and civilian production is distorted. The bounds of the potential bias perhaps can be estimated by examining profit rates in the machine building and metalworking sector, where most of the new product pricing problems arise. In 1972 the average profit rate in all machinery production was 14%. If profits on military machinery had been held to 4%, the raising of profit margins on military products to the level prevailing in civilian machinery manufacture would raise the value of military purchases from the machinery sector by 15%.

27. An additional source of error in the estimate of Soviet defense spending results from the sampling procedures used to get around the scarcity of information on actual ruble prices for military hardware. For a substantial part of military hardware procurement – about 40% of total defense spending – Soviet weapons are priced in dollars (an estimate of what they would cost the US Department of Defense) and then converted into rubles by using estimated ruble-dollar ratios. These ratios are obtained from samples of prices of a few military goods and of civilian goods with similar characteristics. Errors from this procedure can arise as a result of

- the estimation of the dollar prices,
- the unrepresentativeness of the sample from which the ruble-dollar ratios are calculated, and
- differences between the ruble prices used in the sample and the actual prices charged in the year for which Soviet defense expenditures are being estimated (ruble-dollar ratio calculations have been based on data from different years and updated by price indexes for fairly broad categories of goods).

28. The net effect of these possible errors is difficult to evaluate, but we believe they probably result in an understatement of Soviet defense spending. This judgment is based on partial completion of a recalculation of the ruble-dollar data base. The work completed to date has raised the estimate of purchases of new equipment and spare parts by about 10%.

### *Evaluation*

29. Reasonable adjustments for the vagaries of Soviet pricing or for possible errors in estimating Moscow's defense bill do not greatly change most of the objective measures of defense burden. Our estimates of Soviet defense spending are more likely to be too low than too high, but errors probably have not caused an underestimation of total defense spending of more than 20%. Increasing the current estimate by 20% would raise the share of Soviet defense spending in GNP by slightly more than 1 percentage point -- or from less than 6% to about 7% in established prices.

30. To eliminate some of the distortions in Soviet pricing, CIA has carried out an adjustment of the GNP to put it on a factor cost basis. We have imputed the average blue collar wage to conscripts, subtracted indirect taxes and added subsidies, and imputed an average return of 12% to fixed and working capital in place of the varying profit rates that characterize the Soviet economy. These rough adjustments increase the cost of defense somewhat, but not greatly. The defense share of GNP is raised by less than one-half of 1 percentage point.

31. Independent estimates of Soviet GNP have resulted in like differences between the share of defense in GNP in established prices and the share at factor cost. Studies undertaken for the RAND Corporation by Abram Bergson found that in 1950 and 1955 the defense share of GNP was 11% at factor cost and 9% in established prices.<sup>7</sup> Abraham Becker, also working for RAND, calculated the defense share of GNP as 6% in 1960 in both established prices and at factor cost; whereas, in 1964, defense was 6% of GNP in established prices and 7% at factor cost.<sup>8</sup> (All of these estimates of the defense shares were based on the explicit defense budget and are lower than the CIA calculations for these years.)

32. Although most of the estimates presented in this report are single valued, the various "objective" measures of the impact of defense spending clearly should be thought of as a range rather than a single number. To review some of the underlying uncertainty:

- Total GNP, industrial production, employment, and the like probably have a range of error of plus or minus 5% (although the estimates are more likely to be too low rather than too high because of the difficulty of measuring private activity completely).

7. Abram Bergson, *The Real Income of the Soviet Union Since 1928*, Harvard University Press, 1961, p. 150 (for 1950); "The Comparative National Income of the USSR and the United States," *International Comparisons of Prices and Output*, D.J. Daly, ed., Columbia University Press, 1972, p. 148 (for 1955).

8. Abraham Becker, "Soviet National Income 1958-64," *National Accounts of the USSR in the Seven Year Plan Period*, University of California Press, p. 96 (for 1960 and 1965).

- Estimates of defense spending in Soviet established prices conceivably could be understated by as much as 20%.
- If the profit rate on defense hardware production is less than that on civilian production, a defensible adjustment might raise the factor cost of Soviet military hardware by up to 15% or so, and total defense at factor cost by about 9%.

Because of these uncertainties, the ratios in Table 1, which represent some of the facets of defense burden, are shown as a range reflecting the cumulative effect of such errors in measurement.

33. Although other factor cost adjustments might be entertained, no set of defensible changes would greatly alter the picture. Factor cost prices, however, are not a wholly adequate guide to the effects of resource transfer in the USSR. As we argue below, the persistent disequilibrium in the Soviet economy means that there are as many opportunity costs as there are alternative uses of resources employed in defense. But, as Becker notes, factor cost prices require only that prices of factors "be proportional to their relative productivities on the average for the economy as a whole, not in each and every use."<sup>9</sup>

#### Assessment of Static Measures

34. The traditional static measures of the economic impact of defense programs – even when adjusted for anomalies in the relative prices of military and civilian goods and services – do not provide a reliable guide to the effect of a change in defense spending. First, static measures do not account for differences among countries (or over time in the same country) in the ease with which resources can be transferred or assimilated. More particularly, they do not convey the fact that a transfer of one billion rubles can be accommodated more readily than a transfer of 10 billion rubles. Second, static measures have nothing to say about the influence of shifting economic policies and priorities or changes in the degree of tautness in the economy, although such factors surely are important in determining the effect of a transfer of resources out of or into the defense sector.

35. Aside from frictional difficulties and the sensitivity to policy changes, two basic problems interfere with the interpretation of the static measures in the USSR:

9. Abraham Becker, *Some Methodological Issues in US-USSR Defense Outlay Comparisons*, RAND Corporation, December 1973, p. 24.

- disequilibrium in resource allocation is the rule in the economy, and
- military production tends to be more efficient than civilian production.

36. The disequilibrium results from the lack of an effective mechanism for distributing factors of production so as to reduce differences in the value of their marginal products. Because the marginal products of factors of production (valued at prevailing ruble prices) vary widely among alternative uses, the value of the civilian goods and services that could be produced by transferring resources from military to civilian employment depends on where the resources go. This general feature of the economic landscape prevents a single-valued measure of the opportunity cost of defense programs.

37. Static measures of defense impact must also contend with a particular facet of the disequilibrium in the Soviet economy – the institutional differences between military and civilian production. Soviet military-related production and R&D are carried on under special rules.

- They have priority in obtaining materials and labor.
- The buyer has a powerful voice in determining what will be produced, in sharp contrast to the buyer-be-damned attitude prevailing in civilian industry.
- Military R&D has closer ties with production than does civilian R&D. The tighter project management stems in part from the fact that military producers face keen competition from product development in the West.
- Party interferences in military production and R&D seems to be minimal compared with the petty tutelage exercised over civilian ministries and enterprises.

38. Because of these institutional disadvantages, resources transferred to civilian pursuits are unlikely to be as productive as they were in military production. There is no reason why military plants producing, say, tanks cannot be efficiently converted to producing tractors, if they are given a like priority. Conceivably, moreover, the preferential treatment granted to some part of military production or military R&D might be withdrawn and granted to a civilian activity. The transfer of such advantages would, however, have to be concentrated along a narrow front; otherwise, the priorities would be ineffective. Large-scale transfers of resources from



defense, which would involve production of a wide variety of civilian goods, would be subject to the usual inefficiencies in civilian economic management.<sup>10</sup>

### Impact of Defense Spending on Economic Growth

39. In assessing the burden of Soviet defense outlays since 1950, the basic historical trends should be kept in mind. The central fact is that while Soviet GNP has more than tripled over the past two decades, total defense expenditures have increased by only 40%. As a result, the share of GNP devoted to defense fell from 15% in 1951 to 6% in 1974. Defense spending patterns since 1950 reflect four major trends.

- During 1951-55, outlays increased markedly.
- The demobilization in the late 1950s led to a sharp decline in spending in 1956-60.
- During the 1960s, Soviet defense spending increased again, although irregularly. The path of spending was influenced heavily by two waves of strategic weapons procurement as the USSR sought to close the strategic gap with the United States.
- After leveling off between 1970 and 1972, Soviet defense outlays rose rapidly in 1973, as the USSR entered a new cycle of strategic procurements. Total Soviet defense spending is expected to grow faster in 1974-76 than at any time since the early 1950s.

40. The ups and downs of defense outlays offer a distinct contrast with the trends in the rates of growth of GNP, GNP excluding agricultural output and services, and industrial production (see Table 3 and the chart). In the late 1950s the decline in defense spending was associated with a slump in rates of growth of major economic aggregates. On the other hand, the upward trend in defense spending in 1961-65 occurred against a backdrop of decline in the rates of growth of GNP, GNP excluding agriculture and services, and industrial production. Since 1965, however, the growth of defense spending has generally moved in concert with the growth of the economy.

10. According to general belief, defense industry and military R&D have access to high-quality resources denied to the civilian sector. With the large growth in graduate education and the expanded assortment of industrial production, this advantage is less than it was a decade ago. In any case, the *efficiency* of military production is related to the ability to command resources when they are needed, not to the command over better resources.

Table 3

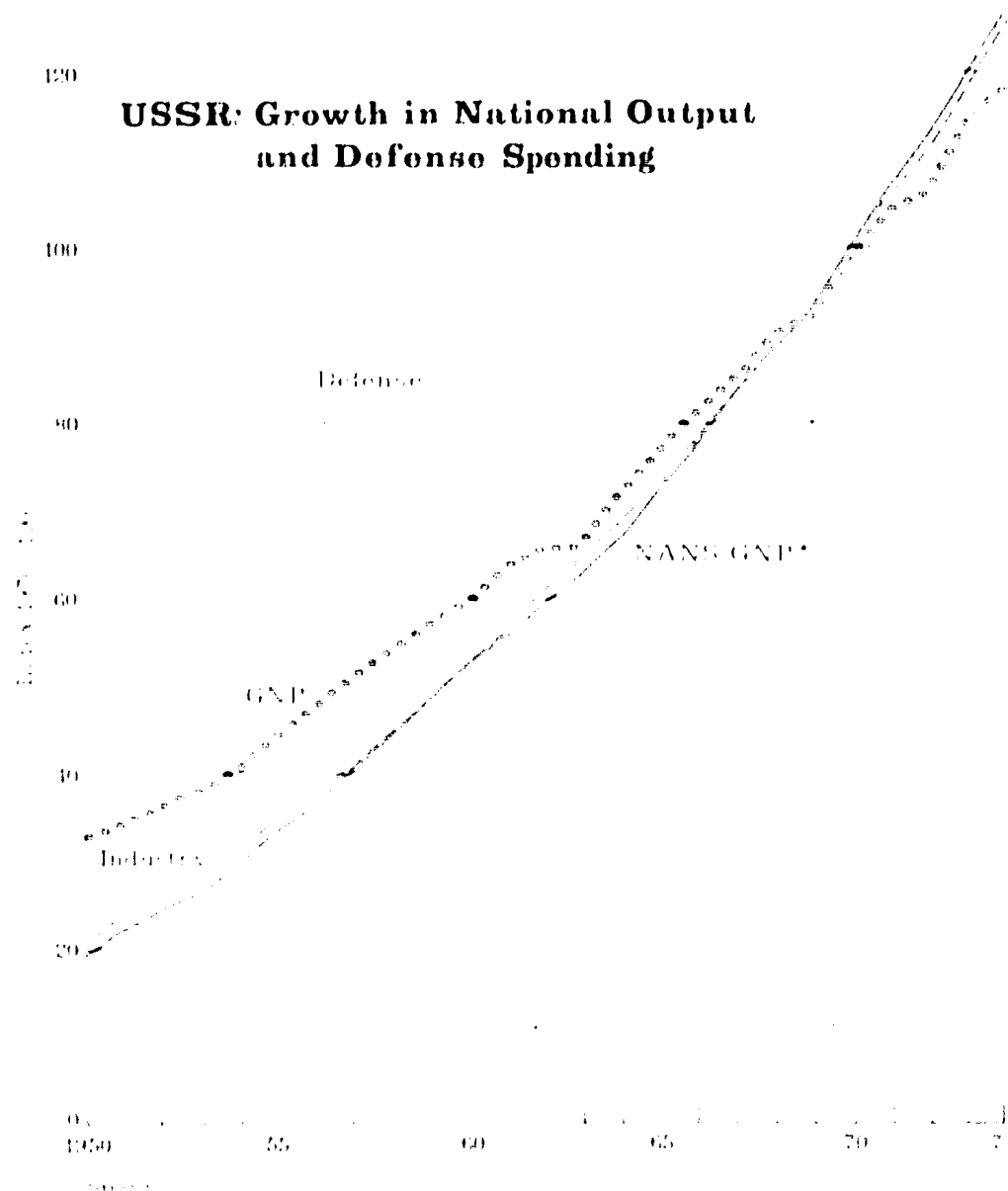
**USSR: Average Annual Growth in National Output and Defense  
(Factor Cost)**

	Percent					
	1951-55	1956-60	1961-65	1966-70	1971-72	Preliminary <sup>1</sup> 1973-74
GNP	6.0	6.1	5.1	5.5	3.3	5.4
NANS GNP <sup>1</sup>	10.9	9.2	6.5	6.7	6.0	6.2
Industrial production	10.9	8.2	6.5	6.5	5.3	6.4
Defense	4.8	-2.7	2.0	3.9	0.4	4.8

1. Nonagriculture, nonservice GNP.

41. Clearly, economic trends in the USSR do not provide convincing evidence of the tradeoff between defense expenditures and economic growth. In this connection, regression analysis or other statistical techniques have not established strong connections or tradeoffs between the growth of GNP and the growth of defense spending, between the growth of defense and the growth of investment or consumption, or even between the growth of production of military hardware and the growth of output of producer durables. To some extent, the lack of correlation could be expected:

- year-to-year fluctuations in overall Soviet military spending have been relatively small;
- whereas we believe that our estimates of Soviet military spending reflect basic trends quite well, they are less successful in identifying annual variations;
- the movement of other economic aggregates in the USSR has been relatively smooth;
- the impact of a change in military spending on the civilian economy involves lags of varying length; and
- the Soviet practice of maintaining the military production base – the factories and equipment, managers, and workers – during periods of slack demand blurs the measurement of tradeoff over time.



42. In addition, important complementary ties between defense spending and civilian production must be taken into account. Military-space demands were mainly responsible for the development of many important sectors of Soviet industry -- especially in electronics, nuclear power, and the production of higher quality materials. The unprecedented program of training scientists and engineers might not have been sustained at such a vigorous pace were it not for the impetus supplied

by the military competition with the United States.<sup>11</sup> Thus, given the emphasis on quantity rather than quality in civilian production and the tremendous needs of postwar reconstruction, the average level of Soviet technology might well be lower than it is today except for the indirect effects of military-space programs of the past 20 years.

43. Nonetheless, the main reason for the lack of correlation between defense spending and other economic aggregates is the intervention of other factors tending to curb Soviet economic growth. For example, the USSR carried out a sharp reduction in the length of the workweek in 1956-61, the extension of the cultivated area came to an end with the settling of the New Lands, and the postwar recovery characteristic of most European countries ran its course. Later on, the predominant influence on growth was a marked slowdown in the rate of increase of the productivity of labor and capital.

44. Despite the difficulty of isolating the impact of military expenditures on the economy, program changes must have been important in certain periods. For example,

- The military buildup in the early 1950s occurred when returns on new investment in civilian programs were potentially large. As a result of war and incomplete recovery, investment could have exploited a backlog of unexploited technological gains and eased structural bottlenecks.
- The military demobilization of the middle and late 1950s undoubtedly helped to ease critical shortages of grain and housing. More than one-fourth of the 4 million men demobilized went to the New Lands area while others went into construction and into the remote regions of the USSR. The demobilization also eased the pressure generated by a low (1% per year) rate of growth of the labor force in 1956-65 – the result of depressed wartime birthrates – and by the 15% cut in the length of the workweek.
- In the early 1960s, Khrushchev's drive to modernize the armed forces may have preempted an unusually large share of specialized manpower and electronics production capacity.

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11. Between 1950 and 1972 the number of Soviet scientists and engineers with graduate degrees increased from 54,000 to 298,000.

### Simulation of the Burden

45. Because direct measurement of the opportunity cost of military expenditures proved to be unreliable, we tried to simulate the tradeoff. The simulation is based on an aggregate production function for the Soviet economy and an assumed pattern of civilian uses for resources hypothetically released from the military sector in 1951-71.<sup>12</sup>

46. In the simulation, defense spending was held to 6% of GNP in all years – about its present level – and the resources represented by the difference between estimated and hypothetical defense spending were put in economic sectors other than agriculture and services, mainly into industry and construction.<sup>13</sup>

47. This redistribution of resources increases the average annual rate of growth of GNP, excluding agriculture and services, in 1952-71 from 7.9% to 8.4%; the corresponding growth of GNP increased from 6.1% per year to 6.4% per year. Although the hypothetical reduction in defense production does not raise the rate of growth of output much, the accumulated changes in GNP and in major end uses of GNP are substantial.

	Billion Rubles
GNP	477
Consumption	418
Investment	139
Defense	-80

48. Because of the assumptions of the simulation (the share of defense in GNP is held to 6%), most of the cuts in military outlays are concentrated in the early part of 1951-71. The gap between actual and hypothetical GNP peaks at about 30 billion rubles in the late 1960s and stays close to that level through 1971.<sup>14</sup> The hypothetical GNP in 1971 is 419 billion rubles, 5-1/2% larger than the

<sup>12</sup> The production function is a constant elasticity of substitution (CES) function, estimated from data on output, manhours worked, and fixed capital in the non-agricultural non-service economy in 1951-71. Compared with other functions like a Cobb-Douglas or the frequently used incremental output-capital ratio, the CES function explains more of the variation in output.

<sup>13</sup> For example, if the savings equaled 20% of defense outlays in a given year, 20% of military manpower would be added to employment in the non-agricultural non-service sectors, and investment in these same sectors would be increased by the value of 20% of procurement of military machinery and 20% of military construction.

<sup>14</sup> An alternative calculation using a Cobb-Douglas function (with weights based on factor shares) changed the average annual rate of growth of GNP in 1952-71 from 6.1% to 6.2%. The aggregate absolute change in GNP was 232 billion rubles.

estimated actual GNP of 397 billion rubles (1970 established prices). If the simulation results are even approximately correct, the Soviet population has been forced to shoulder a sizable cumulative defense burden over the past 25 years.

49. In the simulation, the estimated elasticity of substitution of capital for labor was quite low (0.37). Since the capital-labor ratio has been rising steeply, returns to new investment have been declining through time -- an observation that fits well with what Soviet leaders have been saying about their economic problems. Table 4 shows the increase in GNP (in sectors other than agriculture and services) that can be attributed to a unit increase in fixed capital, at different points in time in (a) the simulation model and (b) as reconstructed from Soviet investment data and CIA estimates of GNP.

**Table 4**  
**USSR: Average Output-Capital Ratios<sup>1</sup>**

	1951-55	1956-60	1961-65	1966-70
(a) Simulation model	0.66	0.43	0.26	0.28
(b) Incremental output-capital model	0.70	0.53	0.35	0.35

1. Nonagriculture, nonservice GNP.

50. Thus the nub of the Soviet growth problem is faltering growth in productivity, due perhaps to a lack of effective personal and managerial incentives and a cumbersome bureaucratic apparatus. To date, however, Brezhnev and Kosygin have done little more than tinker with the administrative structure while stepping up efforts to acquire Western technology.

51. Even though the objective measures of burden are in the main imprecise, certain propositions are clear: defense outlays have been declining in relative importance in the economy. More important, the USSR -- or at least its leaders -- has not considered the burden heavy enough to deflect it from supporting a large and growing military budget and, in the process, accumulating huge inventories of missiles, ships, aircraft, and land armaments. One possible exception that might be noted -- the demobilization of the late 1950s -- suited both Khrushchev's strategic predilections and his desire to do more for the consumer.

52. In sum, the central conclusion to be drawn from economic measures of burden of military expenditures on the Soviet economy is (1) whatever the

strain is, it has probably eased over the years and (2) historical and analytical evidence suggests that the present rate of growth of military outlays can be sustained or accelerated without taking a larger share of national product. These conclusions, however, are drawn from Western analyses conducted within the framework of Western economies. Soviet perceptions of the impact of defense spending -- the "subjective" burden -- could be shaped by quite different considerations. And, for the Western policymaker interested in the pressures on his counterparts in the USSR, these Soviet perceptions are all important.

### **Soviet Views of the Defense Burden**

53. Although the most important perceptions of the Soviet defense burden are those of the Soviet government, these perceptions are but dimly seen from the West. Moreover, the range of perceptions of the defense burden in the USSR is surely very wide. The population, party and government officialdom, and the leadership have special interests that affect their outlook on military programs.

#### *Popular Views*

54. The Soviet leadership, while increasingly sensitive to living standards, tells its population almost nothing about defense outlays and consistently employs all media to justify the need for an ever stronger defense. The Soviet people, as a consequence, perceive the burden of defense as extremely large.<sup>15</sup> For years they have been told that the need to strengthen the nation's defenses required sacrifices, and the veil of secrecy cast over defense matters has given the population an exaggerated idea of the scale of defense activities.

55. Actually, the defense burden in the USSR is larger from the consumer's point of view than from the planner's. For economic planning purposes, the government uses prices based on costs of production while the goods consumers buy are priced to clear the market and often include a large tax. This means that a million rubles of resources, if shifted from defense uses to consumption, is likely to bring a good deal more than this on the consumer market.

#### *Perceptions of Midlevel Officials*

56. The party and government officials below the very top level apparently do not know much more about the dimensions of Soviet military programs than

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15. According to numerous reports, the average citizen even feels that the relatively small foreign aid programs to countries like Cuba impact seriously on his consumption.

the general population does. Although we have little direct evidence of their views, they probably believe that the defense burden is fairly large. Indeed, the officials in responsible positions in enterprises and in government are likely to have day-to-day knowledge of how defense programs impinge on their interests -- a plant manager cannot get a special variety of steel because he has been bumped from the delivery schedule by a defense plant, or a high republic official is directed to ensure that the military facilities under his jurisdiction get the fuel and power they need when shortages occur. Nevertheless, we do not believe that a mechanism exists by which midlevel officials can affect decisions on military policy and programs.

### *Attitudes of the Top Leadership*

57. Thus, the perceptions that count in the USSR are those of the top leadership -- in particular the 23 men in the Politburo. They do not say a great deal about defense burden, and what they say mostly follows the party line ("We do not want to spend those large sums on defense, but we will do what is necessary").<sup>16</sup> Nikita Khrushchev was a notable exception to this rule. In some of his public statements while he was in power and later in his memoirs, he described concretely how the drive to build up Soviet strategic forces in the early 1960s curtailed consumer-oriented programs in housing and agriculture. Of course, the appeal to the demands of national security helped stave off criticism of Khrushchev's failure to make good on a number of promises -- failures that can be traced mainly to factors other than military spending.

58. In the absence of convincing testimony on leadership perceptions of the defense burden, the views of the men who decide defense allocations must be inferred from their actions. And in general, the leadership has not acted as though the defense burden had a major influence on their decisions. Defense programs have been well-funded, and the followthrough on new military programs has been strong even in the face of economic setbacks like the agricultural and chemical industry crises of the early 1960s and the poor crop of 1972. To the extent that the Politburo is worried about a defense burden, the concern probably centers on the unknown costs of competition in future strategic programs beyond those registered in today's rough US-Soviet parity.

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16. For a summary of the available evidence on leadership perceptions, see Appendix C.



## APPENDIX A

### SOVIET DEFENSE BURDEN: THE INSTITUTIONAL SETTING

#### Management of the Economy

Under the Soviet "command economy," the Politburo of the Central Committee of the CPSU establishes priorities and guidelines for the annual and five-year plans. These policies are fleshed out in the form of detailed plan documents by the Council of Ministers through a major staff arm, the State Planning Committee (Gosplan). Early drafts of a plan are normally discussed with subordinate economic units and modified according to bureaucratic pressures and later developments. The Council of Ministers implements the final plan decisions and checks on results. It has the responsibility for determining the output of all major commodities and for setting all important prices and wages.

Subordinate to the Council of Ministers are 42 industrial ministries, 19 nonindustrial ministries, and 28 state committees and other agencies with ministerial status. The ministries at the all-union level, such as the Ministry of the Defense Industry, are located in Moscow and directly supervise production facilities throughout the country. Union-republic ministries such as the Ministry of Agriculture have central headquarters in Moscow and subordinate ministries in the republics, with the central ministry directing major enterprises and subordinate ministries administering the remainder. Subordinate to the ministries are the thousands of individual economic units - enterprises, farms, and research organizations - that are responsible for production, supply, sales, and transportation in accordance with plan targets.

#### The Defense Economy

##### *Organization and Management*

Of the 42 industrial ministries, 8 have primary roles in the development and production of weapons and military equipment. Four of these eight ministries appear to be prime developers of weapons systems; the remaining four are for the most part subsystem and component producers. Substantial support in the form of materials, equipment, components, and technology is furnished by other ministries and the USSR Academy of Sciences.

The defense-industrial ministries engage in a wide spectrum of activity, from basic and applied research to series production and to ongoing monitoring and overhaul of existing weapon systems. In addition to military output, they produce a substantial quantity and assortment of civilian goods. Over a long period of time they have integrated vertically in order to control many of the resources -- raw materials, machinery, and R&D activities -- needed for the development and production of their military hardware lines. In many cases, the defense-industrial ministries themselves are the only suppliers of the capital equipment needed in their own production processes. Military R&D is greatly aided by special prototype and other facilities not present in the civilian sector.

The Soviet defense establishment, including the defense production sector, is strongly represented at the highest political levels. The Politburo, assisted by the Defense Council -- an advisory body on military affairs -- is the locus of national defense policymaking. It determines the priority to be placed on defense as a general economic activity and on specific defense programs. The views of the defense establishment find their most unequivocal expression in the Politburo in the person of Defense Minister Grechko, a full member since 1973; at the same time, the other members of the Politburo put defense requirements at the forefront of priorities, though not with equal vigor.

The *de facto* supermanager of all defense industrial matters is candidate member of the Politburo D.F. Ustinov, also believed to be a member of the Defense Council. He is assisted by the Defense Industry Department of the Central Committee, which reports directly to him. His effectiveness as a supervisor is enhanced by his longstanding familiarity with many of the top defense-industrial managers, who began their careers under him and share his perspectives.

The formal administrative agency of the highest level for military R&D and production programs is the Military Industrial Commission. A daily working committee of the Council of Ministers, it contains representation from the Ministry of Defense and each of the defense-industrial ministries. The Commission combines into one unique organization wide supervisory, planning, and coordinating powers. Presumably, it is responsible for directing the defense-industrial ministries, coordinating defense-related industrial projects within other ministries, and providing interface between the Ministry of Defense and the industrial sector of the economy. In addition, the Commission probably plays a key role in the technical and economic evaluation of proposed new weapons programs.

The service branches of the Ministry of Defense are the customers for weapons developed and produced within the industrial sector. The technical directorates of each service are charged with the responsibility for originating weapons requirements and specifications, monitoring research and development, performing acceptance testing, and enforcing quality control during series production. Military representative teams, the indispensable assets of the technical directorates, are present at every facility having substantial military R&D or production contracts. The chief military representative is a high-ranking and specially trained technical officer whose responsibilities include the annual development of independent cost estimates of weapons and equipment produced by that facility.

The weapons development and acquisition process is initiated by the technical directorates of the individual branches of service. Requirements generated here are assembled by the General Staff of the Ministry of Defense and then forwarded to the Military Industrial Commission for review. The Commission coordinates the requirements with the industrial sector and arrives at some judgment regarding program feasibility. It is the likely forum for most technical discussions and debates and probably solicits expertise and advice from a variety of sources.

#### *Operating Characteristics*

Defense-related ministries function according to many of the same rules as do civilian industrial ministries. The principle of financial autonomy applies to all enterprises, and we believe that the Soviets intend that the costs of weapons in series production be fully defrayed by the procurement prices paid by the Ministry of Defense. Nevertheless, military production is different from civilian production. Military goods and components are manufactured to higher specifications and are subject to stringent quality control standards. Production schedules are also much more rigid. Higher prices are charged the Ministry of Defense in order to accommodate these factors, although cost accounting procedures may not be adequate, particularly in the case of joint military-civilian production, to fully reflect quality differences. Another salient characteristic of the defense sector is the existence of excess capacity, which has often been noted at major defense facilities. The longstanding campaign to have defense enterprises produce a specified quota of consumer goods in part is an attempt to employ production and design teams temporarily idled by defense program phasing.

Soviet defense industries are more technologically advanced than their counterparts in the civilian sector. This situation is the natural outcome of a history of preferential investment for heavy industry – within which the defense sector

comprises a privileged enclave. In addition, premium wages, salaries, and incentives have attracted a highly qualified body of scientists, technicians, and production workers. Since high-level interest assures priority in obtaining scarce equipment and materials, some of the bureaucratic obstacles that plague the remainder of the economy pose a less serious problem to the defense industries.

Another important source of high-level performance is that Soviet defense industry – unlike civilian industry – engages regularly in product competition with the West. The confrontation between the United States and the Soviet Union has long stimulated the defense industries to produce and apply the advanced technology necessary for the development of strategic weaponry. This pressure is greatly enhanced by the need to respond to the views and demands of the Soviet defense establishment – a nearly sovereign consumer whose influence extends from the Politburo to the production line.

As a result of these competitive pressures, the defense industries have played a key role in the introduction into the Soviet economy of advanced capital equipment as well as an array of products whose assimilation would otherwise have been delayed. Specific examples include computers, automation equipment, and advanced metal-forming machine tools. Many of these goods were developed in, and continue to be produced only in, facilities subordinate to the defense-industrial ministries. The effectiveness of the defense-industrial sector in innovation must be understood as relative to the remainder of the Soviet economy; compared with the United States, Western Europe, and Japan, the USSR has great difficulty in (1) translating products from the development stage into successful series production and (2) motivating industrial managers to improve the quality and variety of their output and to modernize their production processes.

## APPENDIX B

### MEASURES OF THE DEFENSE BURDEN

This Appendix briefly treats the methods used to estimate (1) Soviet GNP, (2) the defense shares of total industrial production and of the output of individual industries, and (3) the demands of the Soviet Ministry of Defense and the defense industries for uniformed and civilian personnel.

#### Estimates of Soviet GNP in Established Prices

The CIA estimates of Soviet gross national product are constructed according to Western definitions of GNP using Western accounting procedures. Official national income and "gross social product" statistics in the USSR are couched in terms of the Marxian concept of "material product" – i.e., they exclude the value of services except for their "material" content – and gross social product includes much double-counting of production.

Total Soviet GNP in ruble terms is estimated as the sum of values added by each producing sector of the economy – i.e., the wages, profits, depreciation allowances, and taxes less subsidies. Published Soviet data on retail trade, new fixed investment, and government outlays and specialized monographs on agricultural topics and household expenditures also provide the basis for reasonably reliable estimates of consumption and investment.

Information is inadequate, however, on expenditures for research and development and inventory changes. Estimates of total GNP arrived at by summing end use items are consequently less reliable than those detailed by summing the sectors of origin. The estimates of economic aggregates in this report agree fairly well with independent calculations made by several Western students of the Soviet economy.

#### Estimates of Soviet GNP at Factor Cost

The pattern of resource use in the Soviet economy is not accurately reflected when GNP is valued in Soviet "established" prices. Commodity prices do not fully reflect charges for primary factors of production – land, labor, and capital – because of the liberal Soviet use of indirect taxes and subsidies and because of the exclusion of important production costs in arriving at prices (the state budget, for example, finances much investment, and Soviet capital charges are quite arbitrary).

CIA, therefore, adjusts Soviet GNP to a factor cost basis by (1) substituting a 12% charge on capital for official profit figures, (2) excluding indirect taxes (chiefly the turnover tax), (3) including subsidies along with money income and income-in-kind estimates, and (4) substituting the average blue-collar wage for the pay of conscripts in military services. Unlike the situation in the United States, where indirect taxes and subsidies are relatively minor, Soviet GNP at factor cost is about 10% less than GNP at established prices. The distributions of GNP in established prices and at factor cost in 1970 are compared in Table B-1.

Table B-1

**USSR: Gross National Product  
1970**

	Billion 1970 Rubles	
	Established Prices	Factor Cost
<b>GNP<sup>1</sup></b>	<b>381</b>	<b>340</b>
Consumption	220	195
New fixed investment, capital repair, and civilian R&D <sup>2</sup>	110	98
Defense and military space	23	21
Other end uses and statistical discrepancy	28	26

1. These figures are for GNP, by sector of origin, which is used as a control total.

2. Including expenditures on civilian space projects.

### Defense Demands on Industrial Output

The defense expenditures were used in conjunction with the Soviet input-output tables to estimate defense demands on specific industrial sectors (Table B-2). The use of input-output analysis permits the measurement of the indirect as well as the direct costs of military programs. For example, in the last two columns of Table B-2 the share of oil and gas production used to satisfy military requirements reflects both (1) direct purchases of petroleum and (2) the oil and gas used by industry and other branches of the economy in producing goods for the Ministry of Defense.

The Soviets published a truncated version of their 1966 input-output table in purchasers' prices. The Research Analysis Corporation (RAC) reconstructed the table, and the US Department of Commerce converted the table to producers'

Table B 2

USSR Military Shares of Sector Output in 1970 Prices<sup>1</sup>

Sector	Percent			
	Share of Deliveries to Final Demand <sup>2</sup>		Percentage Share of Gross Output <sup>3</sup>	
	1966	1970	1966	1970
Total material production	8	7	8	7
Ferrous metallurgy	7	6	15	15
Nonferrous metallurgy	5	8	20	19
Coal	3	2	8	10
Oil and gas	23	19	12	12
Electric power	13	17	10	12
Machine building and metalworking	32	27	26	22
Chemicals	24	22	13	11
Woodworking	3	4	5	5
Paper and pulp	12	19	7	8
Construction materials	17	16	4	3
Soft goods	3	3	4	4
Processed foods	2	2	2	2
Other industry	2	2	3	3
Construction	1	1	1	1
Agriculture	2	2	2	2
Transportation and communications	2	2	7	6
Trade and distribution	....	....	2	2
Other branches	2	2	5	4

1. Total military expenditures, including the estimated material expenditures for military and military space R&D but excluding outlays for services (mainly the pay of military forces and civilian employees of the Ministry of Defense). Material production under the Soviet definition excludes the value of services except for the material components of such services.

2. Direct deliveries to private and public consumption, investment, defense, and other end uses of national income (Soviet definition).

3. Share of total sector output that directly or indirectly supports deliveries by the listed sectors to the military-space establishment.

prices. CIA developed input-output tables for 1966 and 1970 in 1970 prices based on the RAC and Department of Commerce tables and used its own defense and GNP estimates to derive the shares shown in Table B-2.

According to estimates in Table B-2, the share of gross output going to defense uses (7%-7-1/2%) is about the same as the share of GNP going to defense. Considering both direct and indirect military demands, the impact of defense is greatest on

the machinery, metals, and chemical industries. The fuels and power, transportation and communications, and paper and pulp industries also contribute fairly heavily (5%-10% of total output) to defense programs.

**Labor Force (see Table B-3)**

**Table B-3**

**USSR: Defense-Related Employment**

Sector	1966		1970	
	Million Persons	Percent of Total	Million Persons	Percent of Total
<b>Total</b>	<b>10.4</b>	<b>8.7</b>	<b>11.2</b>	<b>9.0</b>
Industry	3.8	13.5	3.9	12.0
Other branches of material production	1.4	2.5	1.3	2.1
Services (including science)	1.7	7.6	2.1	7.8
Military forces	3.5	100.0	3.9	100.0
Uniformed	3.3	100.0	3.7	100.0
Civilian	0.2	100.0	0.2	100.0

The intelligence community estimates the number of uniformed and civilian personnel directly employed by the Soviet Ministry of Defense from order-of-battle and table-of-organization information. Estimates of the number of civilians employed by the Ministry of Defense are based on US analog information.

Using the Soviet input-output tables for 1966 and 1970, the share of defense-related employment in total employment has been higher than the defense share of GNP. Aside from the military forces themselves, the defense bite is particularly large in industry.



APPENDIX C

SOVIET STATEMENTS ON THE DEFENSE BURDEN

The brief and guarded statements by Soviet officials on the burden of defense indicate that differences exist on this sensitive question among individual leaders and organizations within the USSR.

**The Politburo**

Politburo members addressing the question admit routinely that spending for defense is a burden that requires material sacrifices by the Soviet people. At the same time, they clearly state that the USSR will continue to spend all that is necessary for an adequate defense -- a formulation that notably fails to provide us with any useful information about their force goals. Among the leadership, Brezhnev, Kosygin, and Gromyko have most often alluded to the desirability of diverting military expenditures into other areas in order to make improvements in the economic life of the Soviet citizenry.

At a dinner held at the Soviet Embassy in Washington during the June 1973 US-USSR summit meetings, Brezhnev emphasized that further progress in strategic arms limitations will allow "our countries to rechannel greater assets for creative purposes, for improving the life of peoples."<sup>1</sup> Shortly thereafter, Kosygin assessed the results of these talks in a speech presented to the Austrian-Soviet Society in Vienna. Further progress in arms control, he claimed, will serve to "alleviate the burden of military expenses" and will "liberate vast material resources for useful and creative aims."<sup>2</sup>

In contrast, Minister of Defense Grechko has avoided any mention of eventually redirecting funds from the military to the civilian sector of the economy. In a 1974 article, Grechko suggested by use of a historical example that "the sole correct Leninist road" is to continue to strengthen military defenses despite the burden this places on the national economy.<sup>3</sup> He emphasized the need for economy and efficiency in the military sector and stated that the maintenance

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1. *Tass*, 22 June 1973.

2. *Tass*, 4 July 1973.

3. "Leading Role of the CPSU in Structuring the Army of a Developed Socialist Society," *Voprosy Istorii KPSS*, No. 5, May 1974.

of the "high technical state" of the military requires "great efforts, huge capital investment" and "considerable labor by the Soviet people." He cautioned that "miscalculations in this sphere could lead to unjustified expenditures of funds and resources."

The members of the top Soviet leadership have not clearly articulated a specific set of conditions that, if attained, would commit them to reductions in defense expenditures. In a 1968 interview for *Life* magazine, Kosygin made the point that exemplary behavior by the United States and a reduction in international tension would be only one factor that might allow the Soviets to cut defense spending in favor of consumerism.<sup>4</sup> In a letter to the UN General Assembly in 1972, however, Gromyko listed the renunciation of the use of force and the "banning" of nuclear weapons "for all time" as two of the prerequisites for a possible reduction in military expenditures.<sup>5</sup>

### The Military

In line with decisions apparently made at the October 1964 and September 1965 Plenums of the CPSU Central Committee and at the 23d Party Congress in April 1966, military authors began writing about the application of operations research methods to the weapons procurement process. An important consideration according to these writers was the need to apply economic criteria to military decisionmaking. They observed that the resources available to any state for the fulfillment of its military policy were limited. Achievement of the maximum possible results within these limits was the goal.

In the August 1968 edition of the semimonthly journal of the military's Main Political Administration, Major General M. Cherednichenko, a proponent of the application of comprehensive planning and systems analysis in defense procurement, warned that the sharp acceleration in weapons obsolescence and the reduced "life cycle" of modern weapons systems increase the potential cost of defense.<sup>6</sup> Nonetheless, he insisted that the qualitative aspects of a weapon system, rather than cost, must always remain the determining criteria.

In a September 1971 article in the same journal, Cherednichenko explained that the defense industry is in the forefront in developing advanced technology and thus provides an important contribution to general Soviet economic growth.<sup>7</sup>

4. *Life*, 2 February 1968.

5. *Tass*, 16 September 1972.

6. "The Economy and Military-Technical Policy," *Kommunist vooryzhennykh sil*, No. 15, August 1968.

7. "Contemporary War and the Economy," *Kommunist vooryzhennykh sil*, No. 18, September 1971.

He also declared that "an improved international situation will permit a portion of the capability of the defense industry to be diverted to nonmilitary production." The use of this formulation by a military writer is highly unusual. Of equal interest was Cherednichenko's statement that "our state had to economize in the allocation of resources for satisfying defense requirements" because of the decision reached at the 24th Party Congress to improve the people's living standards.

The issue of preferential treatment for the civilian sector of the economy, to which Cherednichenko alluded, was explicitly dealt with in a number of articles published in the military press during the same period. A November 1971 article in *Red Star* by Gosplan official F. Kotov claimed that the new investment priorities of the Ninth Five-Year Plan had not altered the traditional preference given producer's goods in the economy as a whole.<sup>8</sup> Through his abstruse arguments, Kotov seemed to be telling his military readers that the "profound shift" in the direction of economic planning was little more than rhetoric. Kotov claimed that "preferential development is being accorded those sectors of heavy industry" which determine "technical progress."

The May and June 1972 editions of *Communist of the Armed Forces* carried articles dealing with the question of defense spending. The treatment accorded this subject, however, differed radically, thus suggesting that the theme of defense spending is a contentious one. The first article, coauthored by a Colonel M. Gladkov and candidate of economic sciences B. Ivanov, exhibited concern over the impact of defense spending and the efficiency with which resources are used.<sup>9</sup> To buttress their arguments the authors cited Lenin.

Lenin stated that under conditions of a threat of imperialist aggression we must, for the sake of the army, be willing to make "certain severe sacrifices, of course, strictly defining the extent of these sacrifices" (*Complete Works*, Vol. 45 p.112), and that *in peacetime the military organization must not be too burdensome to the national economy. Economic work in the armed forces also assumes observance of the party's general requirement concerning economic activities, or, precisely, concern for the needs of the consumer and for economy in social labor.* The proper handling of this problem means the subordination of departmental interests to general state interests. [emphasis added.]

8. "Structural Changes in the Country's Economy," *Krasnaya zvezda*, 30 November 1971.

9. "The Economy and Military-Technical Policy," *Kommunist vooryzhenykh sil*, No. 9, May 1972.

The second article, by a Lieutenant Colonel D. Volkogonov, which was signed to press on the eve of President Nixon's visit to Moscow, emphasized the existence of "favorable opportunities for improving our country's defensive might."<sup>10</sup> Volkogonov's brief treatment of the relationship of military development to the national economy was designed to support his call for further strengthening of the armed forces.

### The Economists

In 1964 a highly critical assessment of Soviet economic performance was reportedly presented to the Central Committee by Abel Aganbegyan, a young Soviet economist.<sup>11</sup> He cited a two-thirds decrease in the rate of growth (presumably in 1959-64), which he blamed mainly on internal mismanagement and wastage of resources and, to a lesser extent, on the heavy commitment of resources to defense. In this connection, Aganbegyan stated, "It is very difficult to compete with the United States since American expenditure on defence and ours are approximately equal, while our economic potential is only half as big as that of the Americans."

Aganbegyan's comments come to us secondhand in the form of incomplete notes purportedly taken at the lecture in which he reviewed his report to the Central Committee. Aganbegyan presumably did not expect his statements to be made public. Understandably, few statements by Soviet economists are available on the ticklish burden issue.

In a 1969 article appearing in the journal of the Ministry of Finance, V.N. Semenov stated that "exacerbation of the international situation has prevented our making the full quota of appropriations intended for agricultural investment."<sup>12</sup> He pointed out that appropriations for agriculture "by no means approximate the amounts stipulated for agricultural development." The tone of these statements suggests some dissatisfaction with the resource allocation policy at that time. Semenov is the head of the Agricultural Finance sector of the Ministry's scientific research institute.

### Gosplan

In a 1970 lecture, Nikolai Baryshnikov, Chief of an unidentified Gosplan office, was particularly gloomy about the social problems in the Soviet Union and

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10. "Urgent Questions Concerning Soviet Military Organizational Development in Light of the Decisions of the 24th CPSU Congress," *Kommunist vooryzhenykh sil*, No. 11, June 1972.

11. *Socialist Commentary*, October 1965.

12. "Agriculture - A Stable Economic Base," *Finansy SSSR*, No. 3, March 1969.

blamed them in part on the defense burden. Baryshnikov indicated that Soviet defense expenditures were "not less" than US defense expenditures and that, because of the lower Soviet national income, Soviet defense outlays created a bigger burden for the USSR than American defense spending did for the United States.

In September 1971, Gosplan official A. Dorovskikh referred to the existence of basic disagreements among economists over the new investment priorities of the Ninth Five-Year Plan.<sup>13</sup> The author alluded to the existence of a group of economists who stressed that preferential treatment accorded light industry, at the expense of heavy industry, and implicitly to the detriment of defense-related industries, was dangerous and could create a lag in the production potential of the country.

Also in 1971, a number of Gosplan officials complained that the escalating cost of new weapons systems and their tremendous demands for trained manpower and high-quality equipment presented major problems for Gosplan. The officials made it clear, however, that the needs of the defense sector were given first priority and that the defense establishment had no reason to complain about its share of the national pie during the coming five-year period.

### The Think Tanks

Members of the USA Institute in Moscow have alluded on several occasions to the advantage that will accrue to the domestic economy from cutbacks in the military expenditures. Noting that the cost of armaments is rising "in truly geometric progression," Director G.A. Arbatov has pointedly warned that US military outlays have turned into "an enormous unproductive part of the economy."<sup>14</sup> Following Arbatov's lead, G.A. Trofimenko, a civilian military policy analyst with the Institute, noted that limitation and reduction of strategic armaments would enable both the USSR and the United States "to dispose of bigger resources more freely in solving their own domestic problems."<sup>15</sup>

### Recent Election Speeches

In the most recent (May-June 1974) round of Supreme Soviet election speeches, Kosygin made the only reference to the sensitive burden issue, stating

13. "On the Relationship of the 1st and 2d Subdivisions of Social Production," *Planovoye khozyaystvo*, No. 9, September 1971.

14. "US Foreign Policy and the Scientific and Technical Revolution," *SShA ekonomika, politika i ideologiya*, No. 10, October 1973.

15. "The USSR and the United States: Peaceful Co-existence as the Norm of Mutual Relations," *SShA ekonomika, politika i ideologiya*, No. 2, February 1974.

that those in the West who suggested increased defense expenditures in a time of detente condemned mankind to an unending wastage of resources.<sup>16</sup> Other Politburo members, while noting the desirability of detente and the need for continued progress in arms control, avoided any mention of the defense burden. Kosygin's statement possibly was an indirect challenge to some members of the Soviet leadership.

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16. Moscow Domestic Service, 1355 GMT, 12 June 1974.